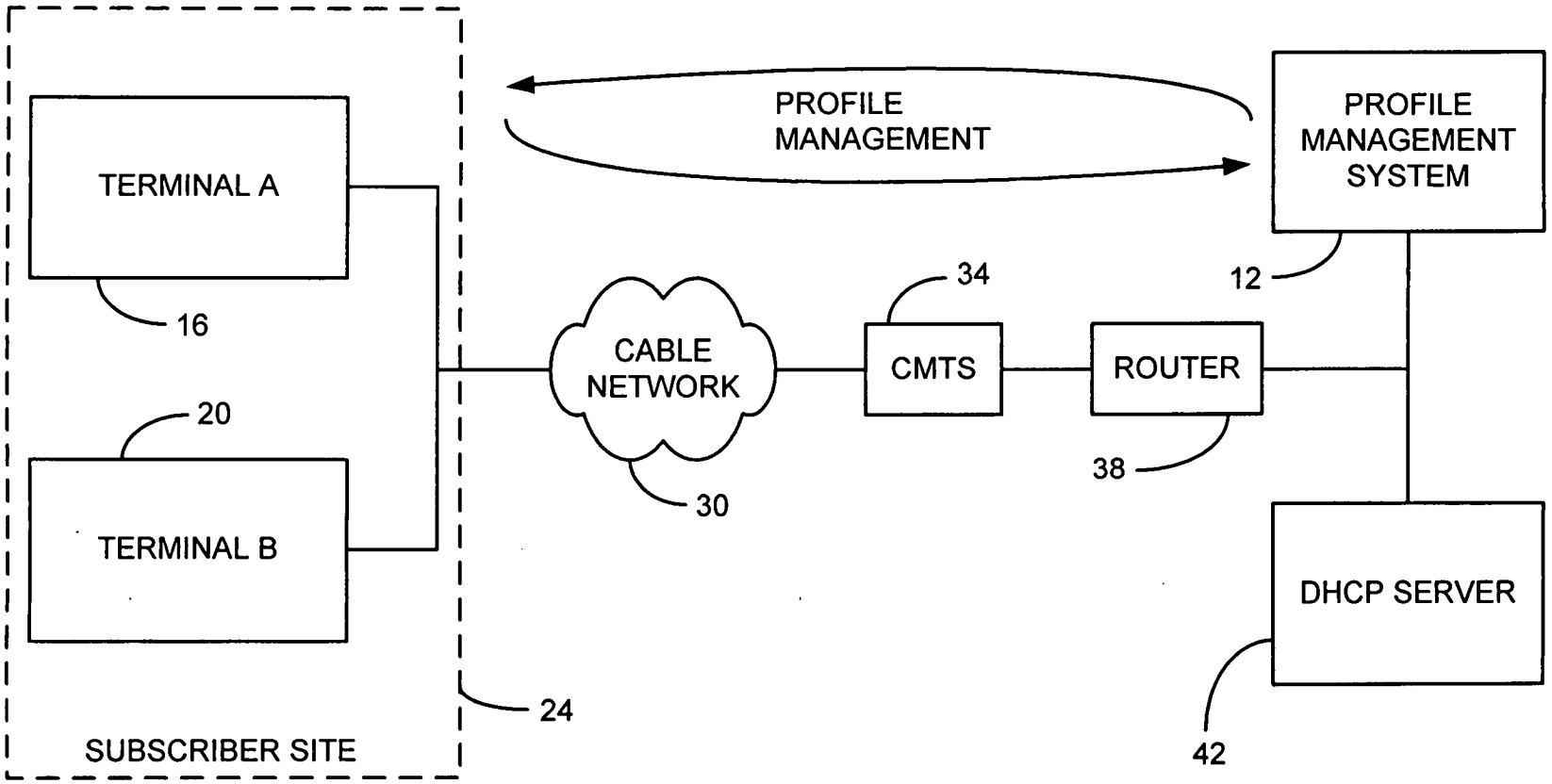

TERMINAL A
16
20
TERMINAL B
SUBSCRIBER SITE
24
PROFILE
MANAGEMENT
PROFILE
MANAGEMENT
SYSTEM
12
CABLE
NETWORK
30
34
CMTS
ROUTER
38
DHCP SERVER
42

FIG. 1

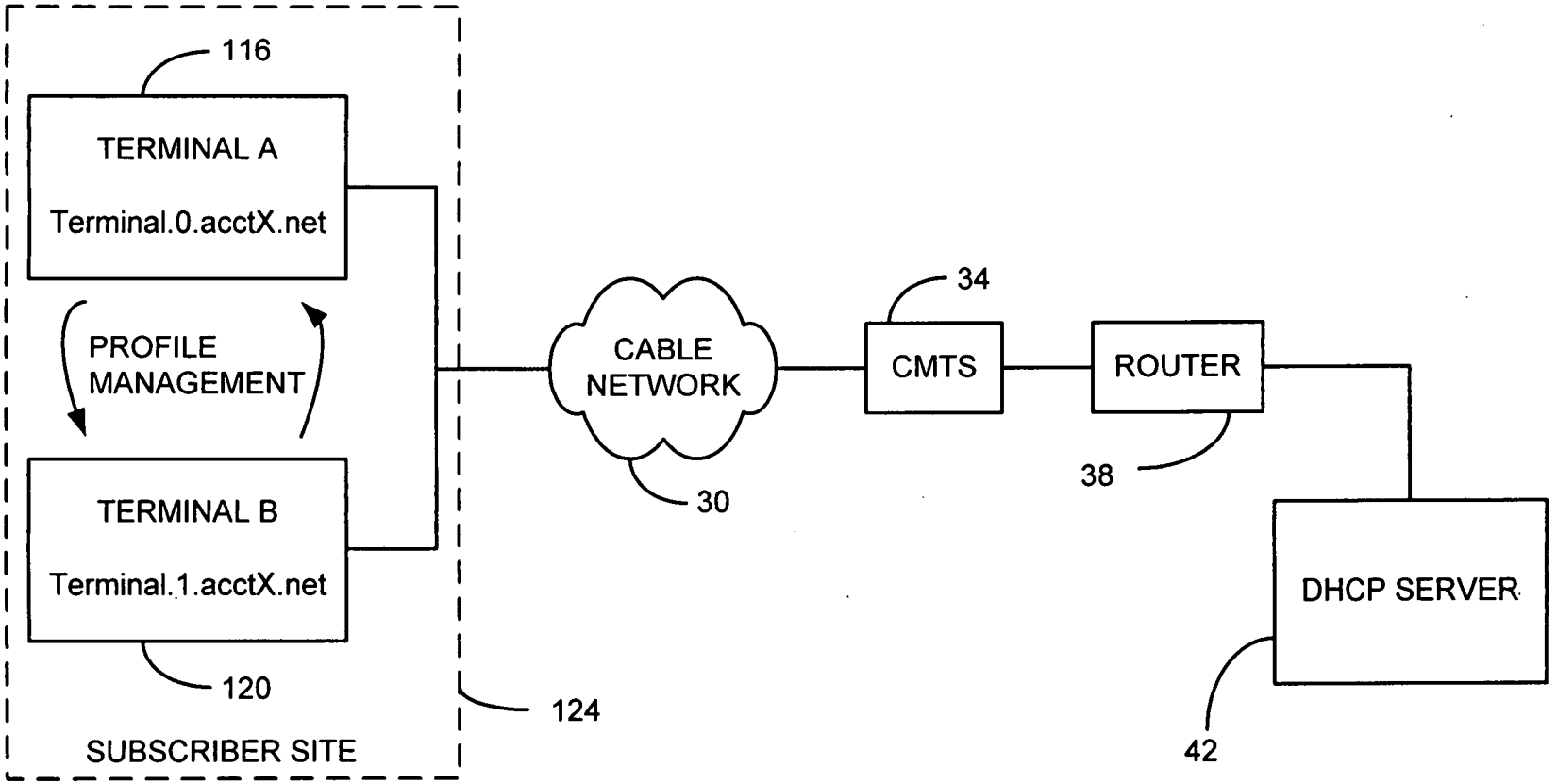
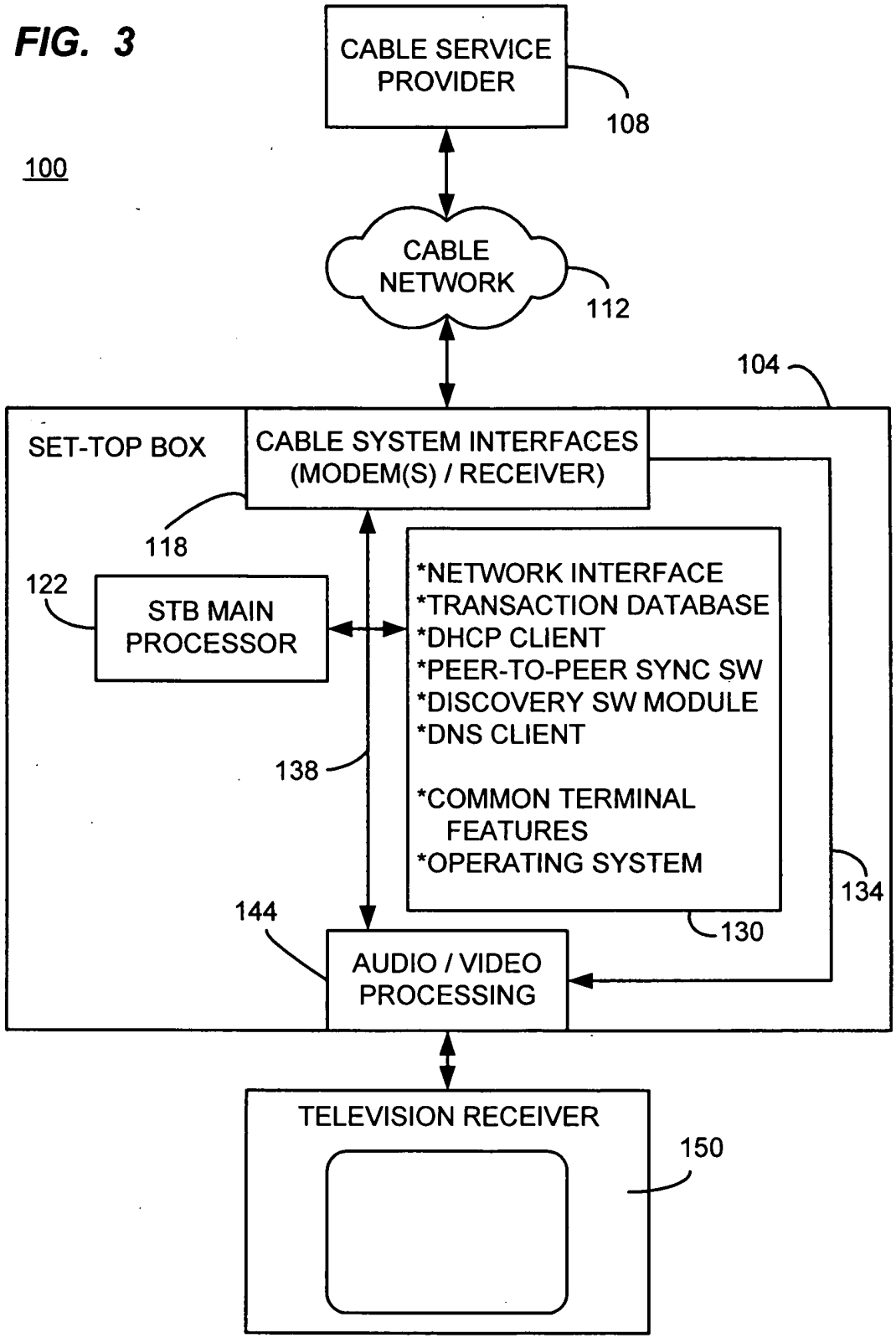

116
TERMINAL A
Terminal.0.acctX.net
PROFILE
MANAGEMENT
TERMINAL B
Terminal.1.acctX.net
120
SUBSCRIBER SITE
124
CABLE
NETWORK
30
34
CMTS
ROUTER
38
DHCP SERVER
42

FIG. 2

FIG. 3


CABLE SERVICE PROVIDER
108
100
CABLE NETWORK
112
104
SET-TOP BOX
CABLE SYSTEM INTERFACES (MODEM(S) / RECEIVER)
118
122
STB MAIN PROCESSOR
*NETWORK INTERFACE
*TRANSACTION DATABASE
*DHCP CLIENT
*PEER-TO-PEER SYNC SW
*DISCOVERY SW MODULE
*DNS CLIENT
*COMMON TERMINAL FEATURES
*OPERATING SYSTEM
138
134
130
144
AUDIO / VIDEO PROCESSING
TELEVISION RECEIVER
150

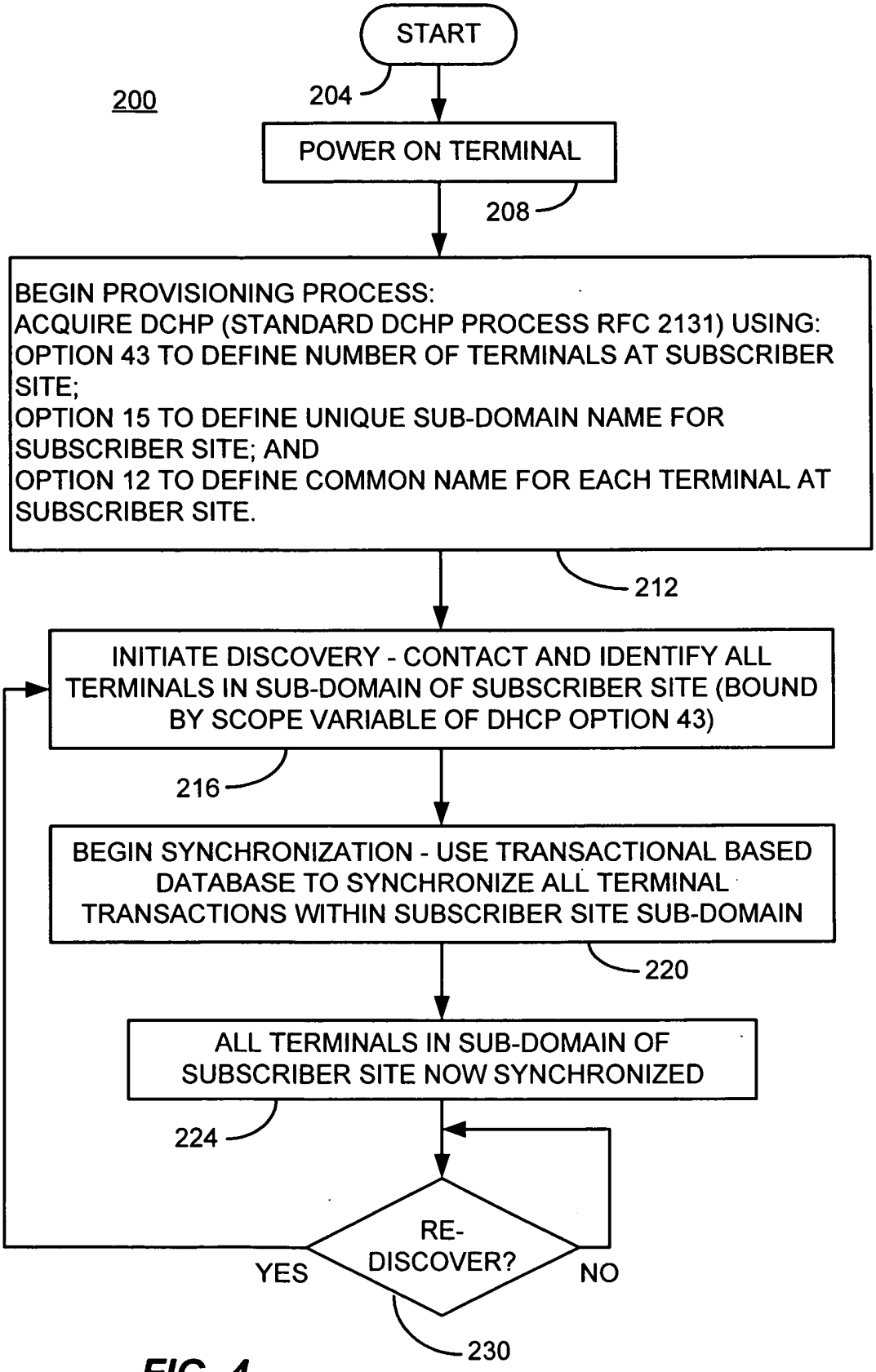

200
START
204
POWER ON TERMINAL
208
BEGIN PROVISIONING PROCESS:
ACQUIRE DCHP (STANDARD DCHP PROCESS RFC 2131) USING:
OPTION 43 TO DEFINE NUMBER OF TERMINALS AT SUBSCRIBER SITE;
OPTION 15 TO DEFINE UNIQUE SUB-DOMAIN NAME FOR SUBSCRIBER SITE; AND
OPTION 12 TO DEFINE COMMON NAME FOR EACH TERMINAL AT SUBSCRIBER SITE.
212
INITIATE DISCOVERY - CONTACT AND IDENTIFY ALL TERMINALS IN SUB-DOMAIN OF SUBSCRIBER SITE (BOUND BY SCOPE VARIABLE OF DHCP OPTION 43)
216
BEGIN SYNCHRONIZATION - USE TRANSACTIONAL BASED DATABASE TO SYNCHRONIZE ALL TERMINAL TRANSACTIONS WITHIN SUBSCRIBER SITE SUB-DOMAIN
220
ALL TERMINALS IN SUB-DOMAIN OF SUBSCRIBER SITE NOW SYNCHRONIZED
224
RE-DISCOVER?
YES
NO
230

FIG. 4

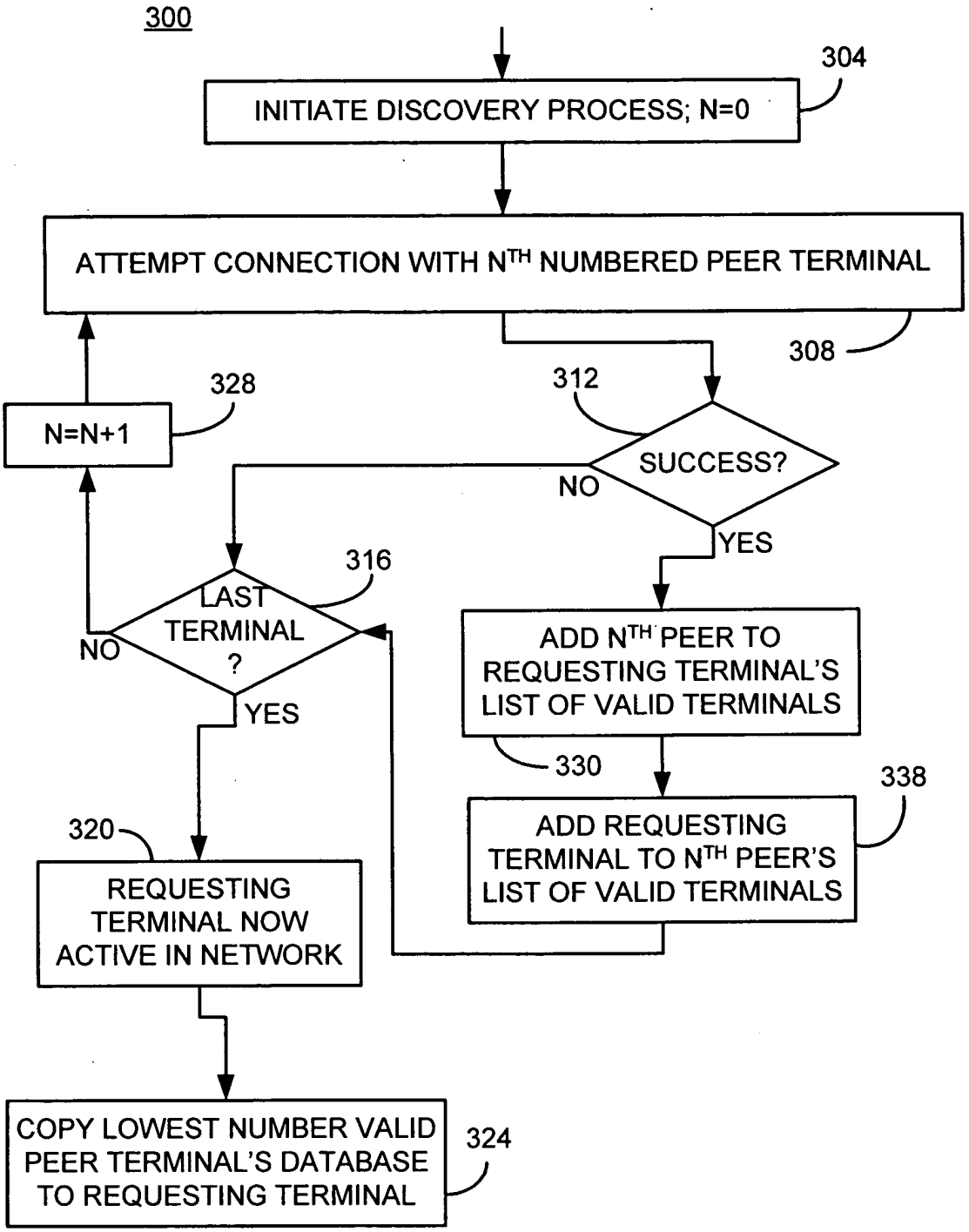

300
304
INITIATE DISCOVERY PROCESS; N=0
ATTEMPT CONNECTION WITH N^TH NUMBERED PEER TERMINAL
308
312
SUCCESS?
NO
YES
328
N=N+1
316
LAST TERMINAL ?
NO
YES
ADD N^TH PEER TO REQUESTING TERMINAL'S LIST OF VALID TERMINALS
330
338
ADD REQUESTING TERMINAL TO N^TH PEER'S LIST OF VALID TERMINALS
320
REQUESTING TERMINAL NOW ACTIVE IN NETWORK
COPY LOWEST NUMBER VALID PEER TERMINAL'S DATABASE TO REQUESTING TERMINAL
324

FIG. 5

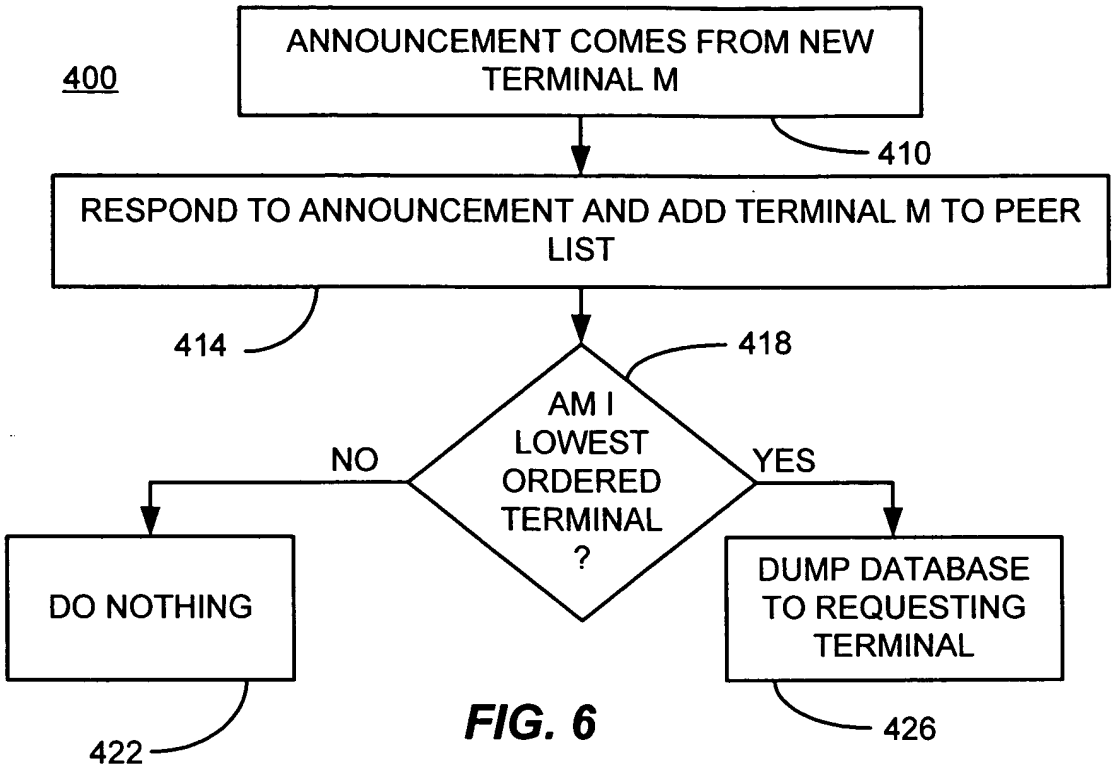

400
ANNOUNCEMENT COMES FROM NEW TERMINAL M
410
RESPOND TO ANNOUNCEMENT AND ADD TERMINAL M TO PEER LIST
414
418
AM I LOWEST ORDERED TERMINAL ?
NO
YES
DO NOTHING
422
DUMP DATABASE TO REQUESTING TERMINAL
426

FIG. 6

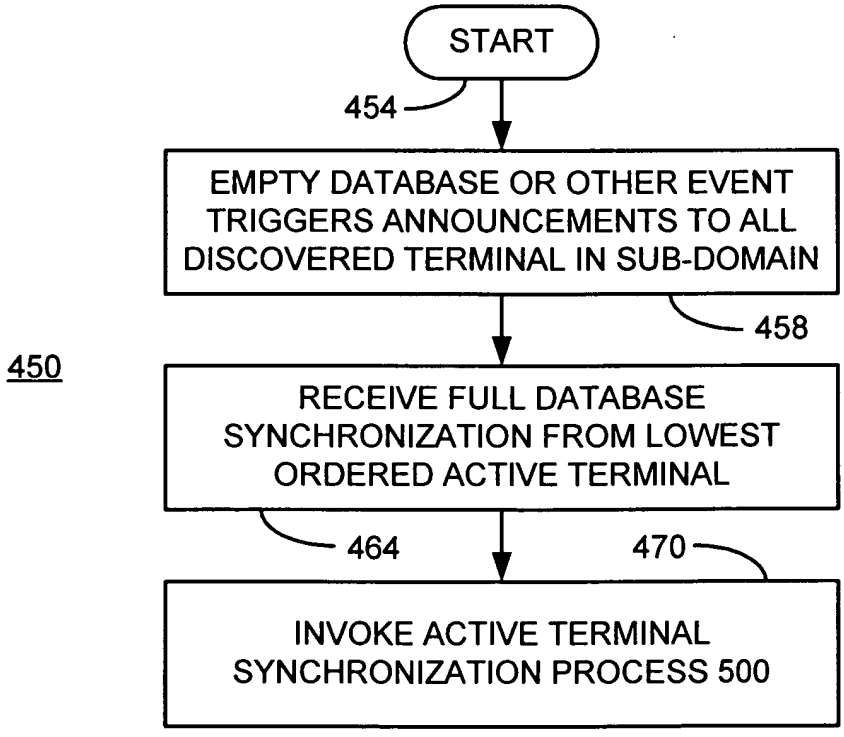

START
454
EMPTY DATABASE OR OTHER EVENT TRIGGERS ANNOUNCEMENTS TO ALL DISCOVERED TERMINAL IN SUB-DOMAIN
458
450
RECEIVE FULL DATABASE SYNCHRONIZATION FROM LOWEST ORDERED ACTIVE TERMINAL
464
470
INVOKE ACTIVE TERMINAL SYNCHRONIZATION PROCESS 500

FIG. 7

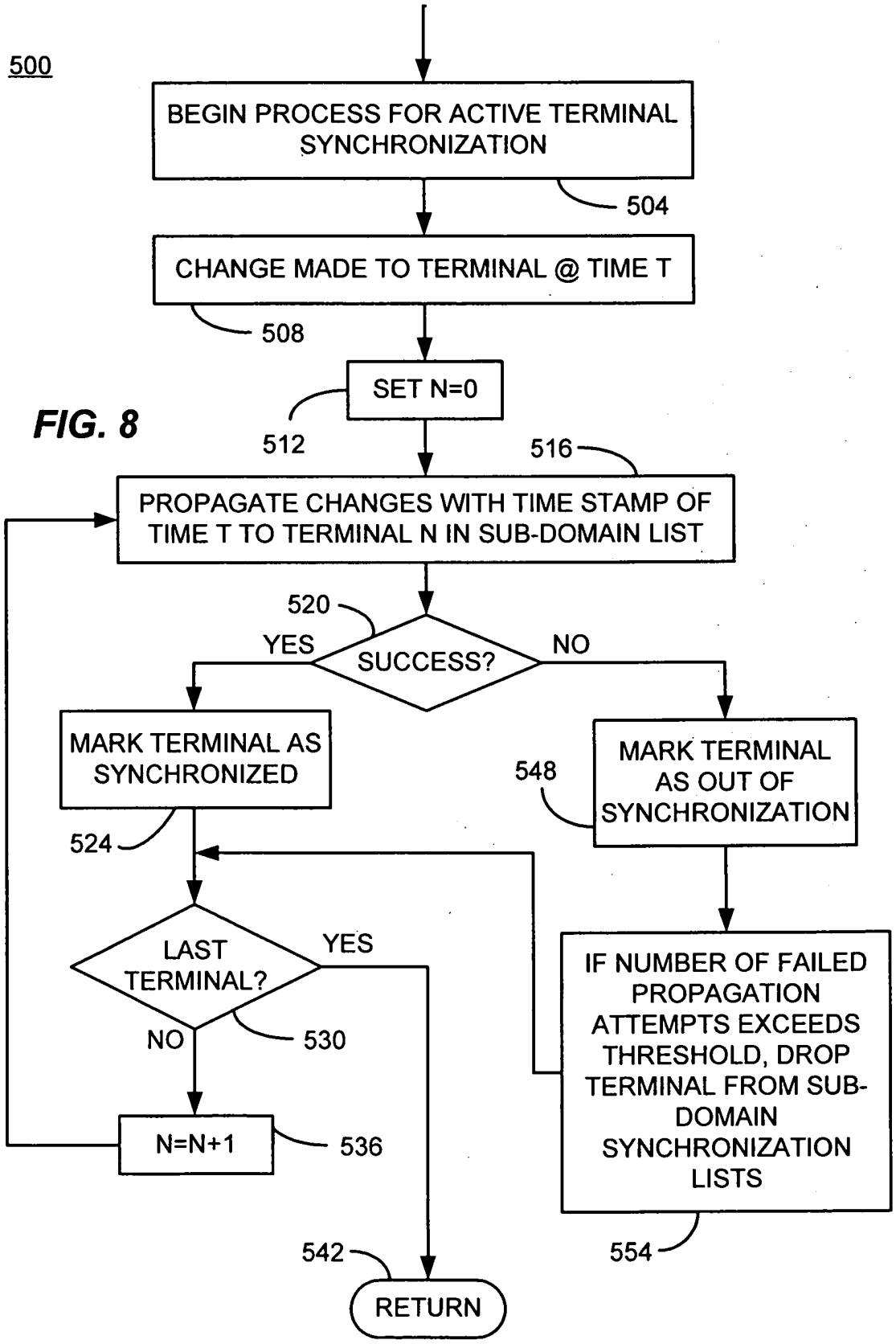

500
BEGIN PROCESS FOR ACTIVE TERMINAL SYNCHRONIZATION
504
CHANGE MADE TO TERMINAL @ TIME T
508
SET N=0
512
516
PROPAGATE CHANGES WITH TIME STAMP OF TIME T TO TERMINAL N IN SUB-DOMAIN LIST
520
YES
SUCCESS?
NO
MARK TERMINAL AS SYNCHRONIZED
524
548
MARK TERMINAL AS OUT OF SYNCHRONIZATION
LAST TERMINAL?
YES
NO
530
N=N+1
536
IF NUMBER OF FAILED PROPAGATION ATTEMPTS EXCEEDS THRESHOLD, DROP TERMINAL FROM SUB-DOMAIN SYNCHRONIZATION LISTS
554
542
RETURN

FIG. 8